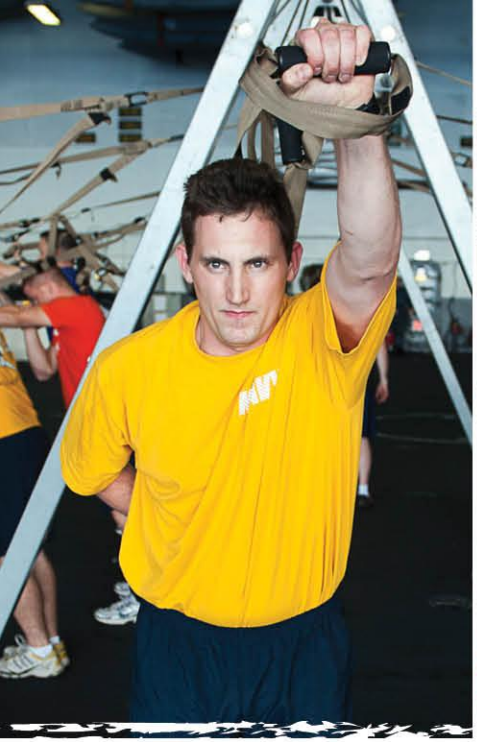


Navy and Marine Corps Public Health Center

Beryllium in Abrasive Blast Materials and Risk of Exposure

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April 2013

Compiled by: NMCPHC 01-FEB-2013

Disclaimer

- The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U. S. Government.

Background

- Coal and Copper Slag
  - Byproducts of Coal Burning and Copper Smelting
  - Fossil fuels known to have metal contaminants
  - Slags come from different sources
- Worker Advocacy Group petition OSHA
  - Failed to list Beryllium on MSDS
- OSHA Regional Managers sent a memo (Jan 2012)
  - Warn makers of slag abrasives – MSDSs may fail to alert workers
  - A slag abrasive manufacturer revised their MSDS (March 2012)
  - Zero to 0.001% Beryllium

Background (Cont)

- Communication to Navy from DOL (March 2012)
  - Requesting Navy to check for beryllium disease in abrasive blast workers
  - OSHA decided to table the request May 2012
- OSHA sent a letter to NIOSH (17 Sep 2012)
  - Request NIOSH to investigate evidence of beryllium sensitization or CBD in blasters at naval shipyards
- Congressman Brady sent letter to Secretary of the Navy (18 Oct 2012)
  - Inquire what action the Navy has taken
  - Disclosing the presence of beryllium
  - How workers are protected

Navy Considerations

- HAZCOM requirements (29 CFR 1910.1200)
  - Incorporating DoDI 6050.5 requirements
- Airborne exposure assessments during blasting does not take into consideration the use of respiratory protection
  - Abrasive blasting is a known “dusty” operation regardless of possible toxic metals present
- The Navy does not manufacture abrasive grit and does not produce MSDSs.
  - Rely on the grit source for information
- Exposure evaluations by Navy IH would include recommendations
  - Health protection
  - Notification of exposure results if Be was detected

Beryllium – Abrasive Blasting – Using Mineral Grit

Personal Breathing Zone TWA

Number of Samples	45
Minimum	0.02 ug/m3
Maximum	12.66 ug/m3
Mean	1.321 ug/m3
Geometric Standard Deviation (GSD)	5.039
95th Percentile	5.132 ug/m3
Upper Tolerance Limit 95/95	10.574 ug/m3

Complete Blasting Ensemble with supplied air
PEL – 2 ug/m3 TLV – 0.05 ug/m3 TWA

Takeaways

- Metal contaminants depend on source of grit and can vary widely
- Abrasive blast operations must anticipate the presence of metals
  - Blast media
    - Expected metal contaminants
  - Corrosion & Coatings being removed
    - Lead
    - Cadmium
    - Hexavalent Chromium
    - Silica
  - Substrate being blasted
    - What type of metal alloys?

Takeaways (Cont)

- Anticipate and monitor exposures for worker protection
- Inherent safety considerations
  - Dust
  - Physical harm
  - Visibility
- Consider the blast media for the job

References

- NIOSH 1998 - Evaluation of Substitute Materials for Silica Sand in Abrasive Blasting http://www.cdc.gov/niosh/abrpt946.html (Sampling for Be, As, V exceeded PELs)

- Navy 2003 – "Navy Response to OSHA's Occupational Exposure to Beryllium -Request for Information," OSHA-HOOSC-20060870-0144

- OSHA 2006 - Maritime Guidance Documents – Abrasive Blasting Hazards in Shipyard Employment http://www.osha.gov/dts/maritime/standards/guidance/shipyard_guidance.html

References (Cont)

- JOEH 2006 - "Comparison of Occupational Exposures Among Painters Using Three Alternative Blasting Abrasives," *Journal of Occupational and Environmental Hygiene*, 3: D80–D84 (Sampling for Be, As exceeded PELs)

- NIOSH 2007 - Control Technology and Exposure Assessment for Occupational Exposure to Beryllium: Abrasive Blasting with Coal-Slag http://www.cdc.gov/niosh/surveyreports/pdfs/263-13a.pdf (Air sampling for Beryllium exceeded the REL)

Questions?